

Name: _____

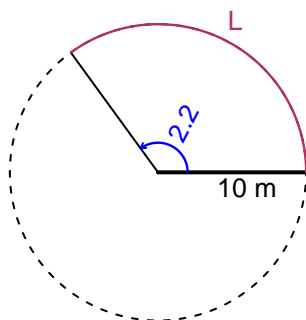
Date: _____

Trig Final (TEST v670)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

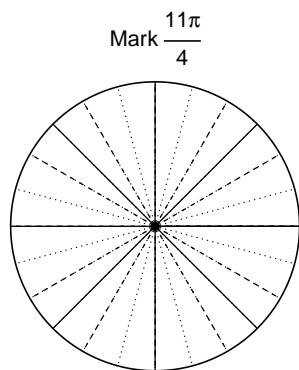
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 2.2 radians. The radius is 10 meters. How long is the arc in meters?

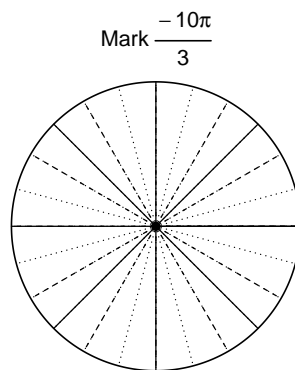


Question 2

Consider angles $\frac{11\pi}{4}$ and $\frac{-10\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{11\pi}{4}\right)$ and $\sin\left(\frac{-10\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\cos(11\pi/4)$



Find $\sin(-10\pi/3)$

Question 3

If $\sin(\theta) = \frac{-40}{41}$, and θ is in quadrant III, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -8.05$ meters, an amplitude of 2.01 meters, and a frequency of 4.82 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).